Appendix J

Sewer Capacity Study

Kimley»Horn

SOUTHLAND CIVIL ENGINEERING & SURVEY, LLP

ENGINEERING DONE RIGHT … FROM THE START

SEWER CAPACITY STUDY

for

Revised Tentative Tr. 73153
Rubio Village
201-217 S. San Gabriel Blvd.
San Gabriel, CA 91776

Prepared for:

Rubio Village, LLC
19112 Gridley Rd., Suite 105
Cerritos, CA 90703
May 15, 2023

Prepared by:

Southland
Civil Engineering
& Survey, LLP

SOUTHLAND CIVIL ENGINEERING & SURVEY, LLP
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Project No. 3480-18010

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1. Introduction

This Sewer Study is prepared as an update to a sewer study prepared by Tritech Engineering Associates (**see Appendix A**) dated October 14, 2014, as requested by the City of San Gabriel due to project re-design and re-submittal of a Revised Tentative Tract Map. The study analyzes the capacity of the existing 8-inch sanitary sewer main in S. San Gabriel Boulevard and potential impacts from the proposed development project at the southwest corner of the intersection of San Gabriel Blvd and Live Oak Ave. Sewage flows from Building I and II are proposed to be conveyed to said existing sewer main. Sewage flows from proposed Building 3 are not included in this study as such sewage flows will be conveyed to the existing 8-inch sanitary sewer main in Pine Street. This study considers the pre- and post-development scenarios to determine the potential project impacts, including the capacity of the existing 8-inch sanitary sewer in S. San Gabriel Boulevard and its ability to carried proposed sewage flows from the proposed development.

2. Site Description

This project site is located south of Live Oak Avenue, west of San Gabriel Boulevard and east of Pine Street in the City of San Gabriel. Building I is proposed north of and Building II south of the L.A. County Rubio Wash channel. Building III southwest of the channel connecting to existing sewer main on Pine Street is not included in sewer study area consistent with the report by Tritech Engineering Associates. There are commercial/retail buildings north and east of the property.

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Residential land use is located west of the site. All existing buildings on-site have been demolished. See **Appendix B** for Site Map.

3. Project Description

The project is a mixed-used development on an existing 2.9 acre site with approximately 13,500 square feet of commercial space (5,500 square feet of which will be restaurant use) and 206 residential condominium units within Building I with four floors of residential above two floors of above street level parking and retail/restaurant uses and two levels of subterranean level parking. In addition to residential units, Building I include 2 restaurant spaces and 4 retail spaces, while Building II includes 16 residential units and 1 restaurant space. Building III, which is excluded from this study since sewage connects to Pine St., consists of 3 three-bedroom residential townhouse units.

Per the Los Angeles County Public Works' Estimated Average Daily Sewage Flows, each bachelor or single unit will add 150 GPD, each 1-bedroom unit will add 200 GPD, each 2-bedroom unit will add 250 GPD, every 1,000 square ft. of commercial floor area will add 100 GPD, and each restaurant seat will add 50 GPD. Restaurant seating was estimated as 60% of the restaurant floor area as "dining area" and using a ratio of 15 SF/seat per Section 1004.5 of the 2018 IBC to determine the number of seats. See **Appendix C** for Estimated Flows and Appendix D for Dwelling Unit Count per the January 23, 2023 redesign.

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4. Capacity Analysis Criteria

For purposes of this analysis, flows were calculated from proposed Building I & II to the existing 8-inch V.C.P. sewer main in S. San Gabriel Boulevard. Sewer flows from the proposed Building III were not included in this analysis, as sewage flows are conveyed to the existing 8-inch V.C.P. sewer main in Pine Avenue. The existing 8-inch in Pine Avenue is not tributary to the system flowing in S. San Gabriel Boulevard. Building III proposes 3 residential units – thus excluding it from this analysis is appropriate.

Existing flows in the sewer main was determined by a sewer monitoring report at City Manhole #753 by Utility Systems, Science and Software, Inc. dated 09-11-2014 found in the 10/1/2014 Tritech Sewer Study. See **Appendix A** for the measured peak sewage flows found in the Sewer Study report.

Per the as-builts, all mains are vitrified clay pipe, therefore a roughness coefficient of n=0.014 is used in this analysis. Only the sewer lines which will receive flow from the proposed project are considered.

5. Proposed Sewer System Description

The project site will discharge to the existing 8-inch V.C.P. sewer main in S. San Gabriel Boulevard between MH #734 and MH #753. The additional daily flow contributed by the proposed project is 0.088 cfs with additional daily peak flow being 0.221 cfs. Please see Section 6 below for project site sewage flow calculations.

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6. Capacity Analysis

Based on the previously completed sewer monitoring report, the existing peak daily flow in the existing 8-inch sewer main in S. San Gabriel Blvd. is 0.0944 cfs. This analysis uses the as-built pipe slope of 0.0032.

The flows from the proposed project site are estimated using LA County Loading Classes for the building uses. **Table 1** below quantifies the proposed sewage flow from the project site. The calculated sewage flow is added to the existing flow in the sewer line to determine if the project flows will exceed the maximum depth of half-full per Los Angeles County standards. See **Appendix E** for hydraulic analysis for existing sewer main and **Appendix F** for as-builts of the existing sewer line in S. San Gabriel Boulevard.

Per Los Angeles County Estimated Average Daily Sewage Flows for Various Occupancies:

PROJECT SITE SEWAGE FLOW (Building I & II)					
Type	**Amount**	**Units**	**Average Daily Flow (ADF)**	**Units**	**Average Daily Flow (ADF)**
Bachelor/Studio Dwelling Unit	12	D.U.	150	Gal/D.U.	1,800
1 Bedroom Dwelling Unit	179	D.U.	200	Gal/D.U.	35,800
2 Bedroom Dwelling Unit	31	D.U.	250	Gal/D.U.	7,750
Commercial Area	7,998	1000	100	GPD	800
Restaurant	***219***	Seats	50	GPD	10,950
				Total Daily Flow (GPD)	57,100
				Proposed Average Daily Flow (cfs)	0.088
				Proposed Peak Flow Daily (cfs)*	0.221
				Existing Peak Daily Flow (cfs)**	0.094
				Total Average Daily Flow (Existing + Prop. Avg.) (cfs)	**0.183**
				Total Peak (Existing + Prop. Peak) (cfs)	**0.315**

Restaurant	
Total Area (sf)	5480
Dining Room Ratio (0.4~0.6)	0.6
Dining Room Area (sf)	3,288
Seat Total	***219***

**Multiply the average daily flow by 2.5 to obtain the peak flow*

***Per Sewer Study by Tritech Engineering Associates, dated October 1, 2014 - See Appendix A for further detail*

Table 1: Project Site Sewage Flow

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7. Conclusions

The total peak daily sewage flow of 0.315 cfs from the project and its tributary area result in a flow depth of 0.33 feet in the existing 8-inch VCP sewer. The proposed flow depth is within the allowable limits of 0.5 times the pipe diameter, based on Los Angeles County Sewer Study requirements. The proposed project does not adversely impact the existing sewer.

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Appendix A

Tritech Sewer Study

87 N. Raymond Ave, Suite 300, Pasadena, California 91103 / o: 626•486-2555

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SEWER STUDY

TENTATIVE TRACT NO. 73153

201-215 S San Gabriel BL. and 224 S Pine Ave,
San Gabriel, CA 91776

10/01/2014

TRITECH
ENGINEERING
ASSOCIATES

SUBDIVISION
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& DESIGN

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EMAIL: info@tritechassociates.com

JOB. NO. 120119

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TABLE OF CONTENTS

I. PURPOSE

THE PURPOSE OF THIS REPORT IS IMPACT STUDY FROM THE PROPOSED SITE DEVELOPMENT ON THE EXISTING SEWER SYSTEM. THE EXISTING SEWER DATA COME FROM THE SEWER MONITORING BY UTILITY SYSTEMS, SCIENCE AND SOFTWARE, INC.

THE MONITORING EXISTING FLOW AT SEWER MANHOLE #753 AND EXISTING 8" SEWER MAINLINE SHOW THE EXISTING CONDITION USED APPROXIMATELY 16% OF THE PIPE'S CAPACITY DURING MAXIMUM FLOW EVENTS. THE VELOCITY DURING PEAK FLOW IS BELOW THE MINIMUM REQUIREMENT ON THIS SITE.

II. DESCRIPTION OF THE PROJECT

A. EXISTING SITE:

THIS PROJECT SITE IS LOCATED ON SOUTH OF LIVE OAK AVE, WEST OF SAN GABRIEL BLVD, AND EAST OF PINE STREET IN THE CITY OF SAN GABRIEL, COUNTY OF LOS ANGELES.

THERE'RE COMMERCIAL BUILDINGS ON THE EAST OF PROPERTY AND A SINGLE FAMILY HOUSE ON THE WEST OF PROPERTY. ALL EXISTING BUILDINGS WILL BE DEMOLISHED.

B. PROPOSED PROJECT:

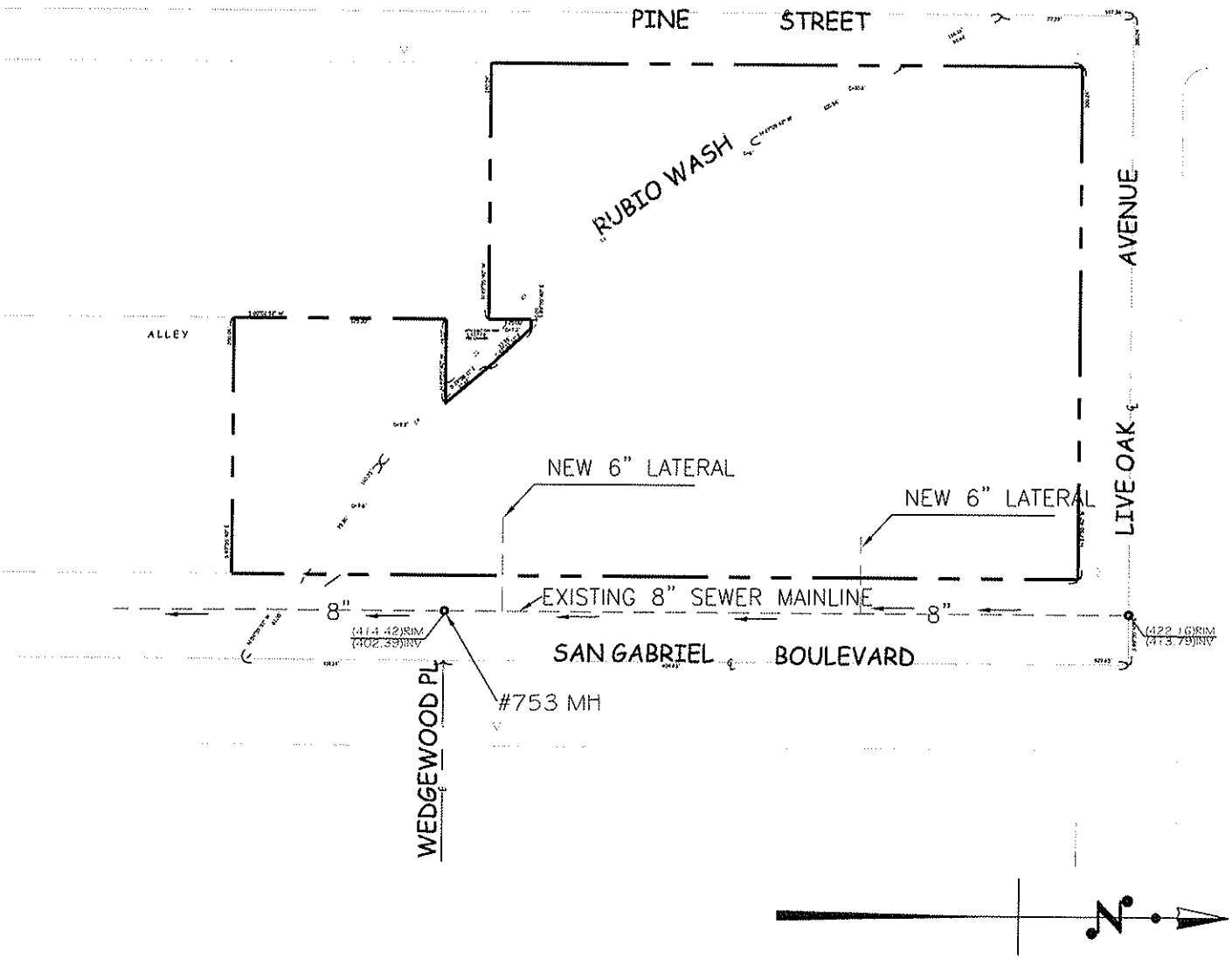
THIS DEVELOPMENT IS MIXED-USE DEVELOPMENT, CONSISTED OF 159-UNIT RESIDENTIALS, 6,319-SF RESTAURANTS, AND 10,230-SF RETAIL STORES WITH 2 LEVELS OF BASEMENT. THERE'RE PARTS OF BUILDING ON TOP OF RUBIO WASH.

THIS PROJECT WILL CONNECT TWO PROPOSED 6" SEWER LATERALS TO THE EXISTING SEWER MAIN LINE ON SAN GABRIEL BLVD.

C. PROPOSED PROJECT FLOW RATE:

FROM PRELIMINARY PLUMBING FIXTURE COUNT, THE TOTAL FIXTURE COUNTS ARE 1,535 UNITS. THAT'S EQUAL TO 767.5 GALLON PER MINUTE. (SEE ATTACHMENT FOR FIXTURE COUNT DETAILS)

III. KEY MAP



KEY MAP

SCALE: 1"=100'
TRACT NO. 73153
THOMAS GUIDE PAGE: 596-F4

SAN GABRIEL, CA.
JOB NO.: 120119

IV. CALCULATION

CALCULATIONS:

EXISTING 8" PIPE DOWNSTREAM OF MH#753

PIPE SLOPE: 0.0285

THE MAXIMUM FLOW RATE FROM MONITORING = 0.061 MGD
= 0.0944 CFS

MAX. FLOW ALLOW:

8" PIPE AT 1/2 FULL:

$Q_{(PIPE)}$ = 0.9351 CFS. = 0.604 MGD

PEAK FLOW FROM THIS DEVELOPMENT(PEAK):

FIXTURE COUNT = 1,535 UNIT

$Q_{(PIPE)}$ = 1,535 x 0.5 = 767.50 GALLON/MIN. = 1.71 CFS
(SEE ATTACHED FIXTURE COUNT)

TOTAL PEAK FLOW INCLUDED FLOW FROM THIS DEVELOPMENT:

$Q_{(PIPE)}$ = 1.71+0.0944 = 1.804 CFS. = 1.166 MGD

DEPTH OF FLOW WILL BE 6.19" > MAXIMUM ALLOWANCE (4")

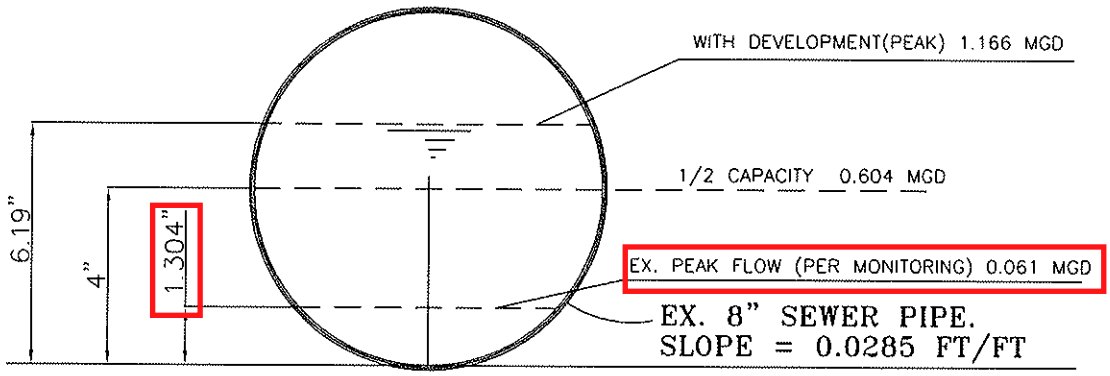

WITH DEVELOPMENT(PEAK) 1.166 MGD
1/2 CAPACITY 0.604 MGD
EX. PEAK FLOW (PER MONITORING) 0.061 MGD
EX. 8" SEWER PIPE.
SLOPE = 0.0285 FT/FT
6.19"
4"
1.304"

FIGURE 1

N.T.S.

IV. SUMMARY

FROM FIGURE 1, THE EXISTING FLOW PER MONITORING WAS 0.061 MGD (THE DEPTH OF FLOW IN PIPE=1.304"). THE FLOW AFTER THIS DEVELOPMENT WILL INCREASE TO 1.166 MGD (THE DEPTH OF FLOW = 6.19") THAT IS OVER THE MAXIMUM ALLOWANCE FOR THE EXISTING 8" SEWER MAINLINE (THE MAXIMUM DEPTH OF FLOW IN PIPE = 4")

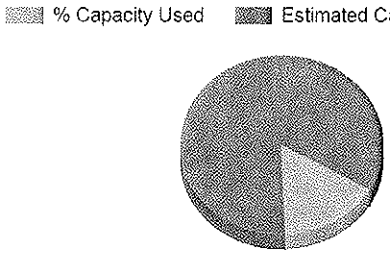
Temporary Flow Study

Landwin

Rubio Village

Meter Start Date		From	9/3/2014 12:00:00 AM
Meter Stop Date		To	9/10/2014 12:00:00 AM
Velocity (fps)		Level (in)	Flow (mgd)
Average	1.280	1.375	0.034
Maximum	1.694	1.886	0.061
Minimum	0.710	0.928	0.013
Pipe Size		8.000	
Estimated Capacity (mgd)		0.382	
Capacity Used		16.02 %	
Sensor Type		Hach - Flodar	

Estimated Capacity Usage



Utility Systems, Science and Software

6190 Fairmount Ave. Suite E
San Diego, CA 92021

601 N. Parkcenter Drive Suite 209
Santa Ana, CA 92705

Site Report 09-11-2014

Confidential Proprietary Information

Landwin	251 S. San Gabriel Blvd
Rubio Village	Manhole No.753

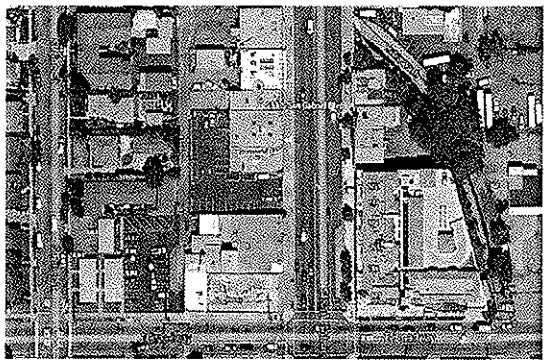
Access:

MH 753, ~ 270 feet north of intersection of S. San Gabriel & E. Broadway & ~280 feet south of MH 752

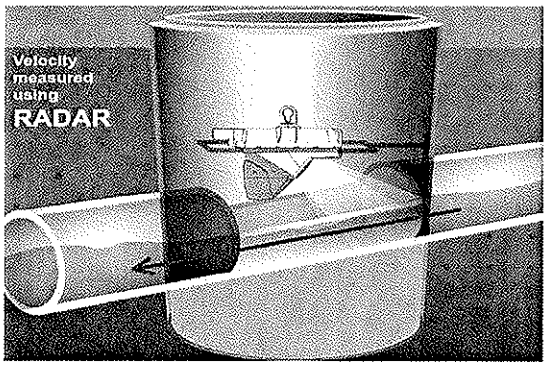
System Type: Sanitary [X] Storm [ ]

Install Date: 9/4/2014

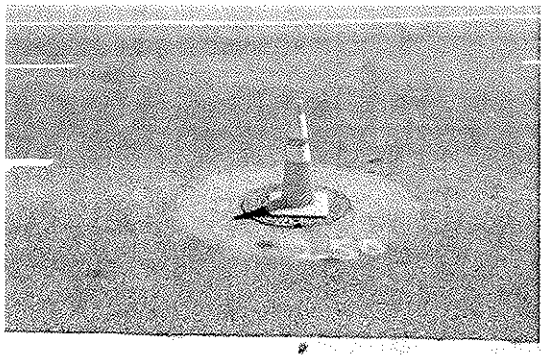
Map



Technology



Traffic Plan



Flow Meter			
Meter Depth ":98.5"			
Meter SN ":*			
Avg Velocity	Avg Measured Level		Multiplier
	1.303		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0

Notes
Client-selected MH 752 contained a drop structure, making it unfeasible for sensor installation.

Traffic Safety
MH in street parking area adjacent to curb and gutter, cones and signs sufficient for traffic control

Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth "	9'
Pipe Size "	8"
Inner Pipe Size " (In/Out)	8"/8"
Pipe Shape	Round
Pipe Condition	good
Manhole Material	brick
Silt (inches)	0
Velocity Profile Data	
Velocity Profile Taken	
Sensor Offset	12.74"
Sensor Dist. to Crown	6"
Flow Direction	Upstream
Flow Heading	South

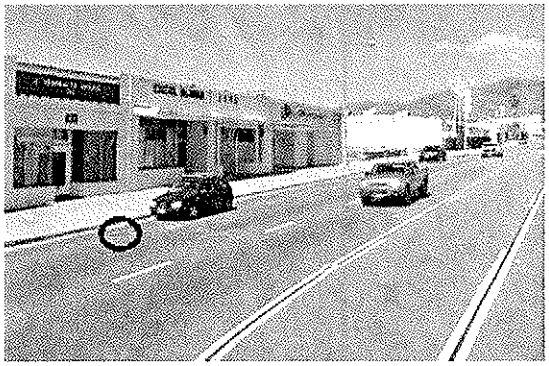
Meter Site Document

Landwin

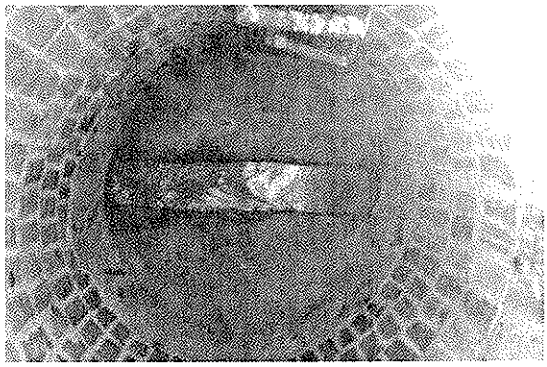
Rubio Village

251 S. San Gabriel Blvd

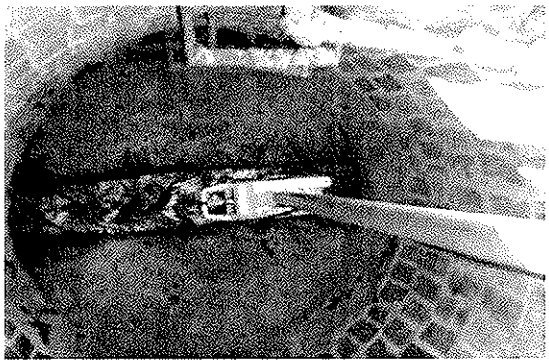
Site



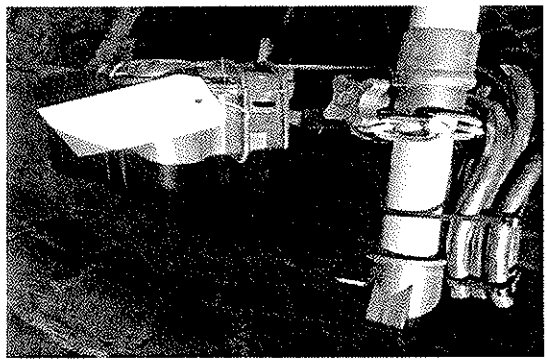
Manhole Before Install



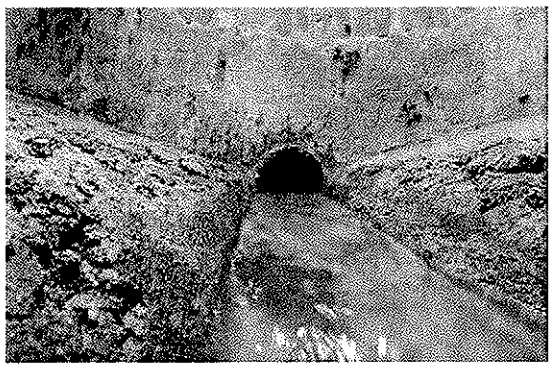
Installation Process



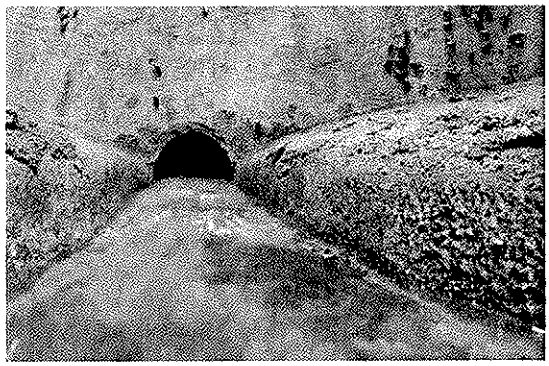
Installed



Upstream



Downstream



Sales Office: 601 N. Parkcenter Drive, Suite 209
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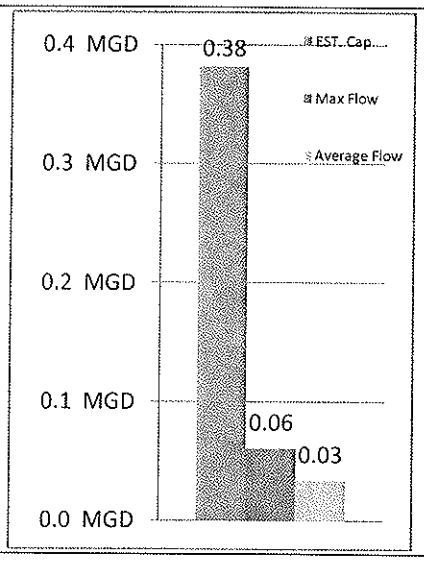
Engineering Office: 6190 Fairmont Ave Suite E
San Diego, Ca 92120 Phone: 619-546-4281

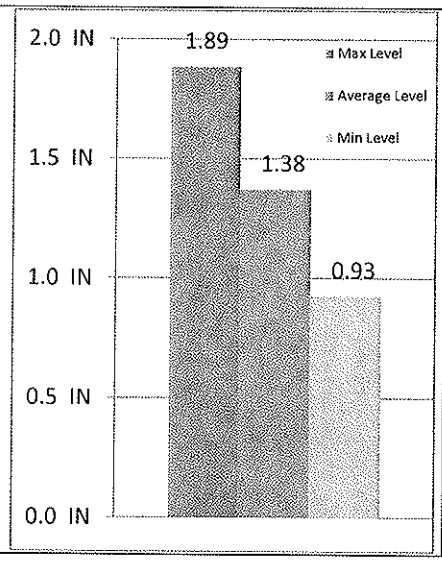
Summary of Site

Site 1. This system capacity assessment was developed for the current conditions to determine potential capacity limitations. MH 753 provided access to an 8 inch pipe. Gas levels were good. The site's flow pattern is representative of a mixed commercial/residential area with high flows occurring around midday and in the evenings. During maximum flow events, the site used approximately 16% of the pipe's capacity. The site's flow monitoring data is presented below.

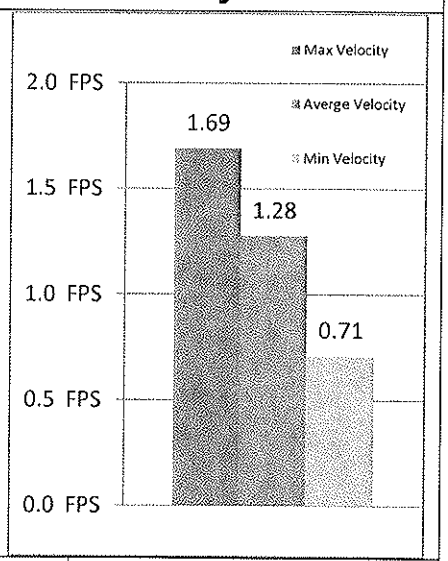
Flow Stats



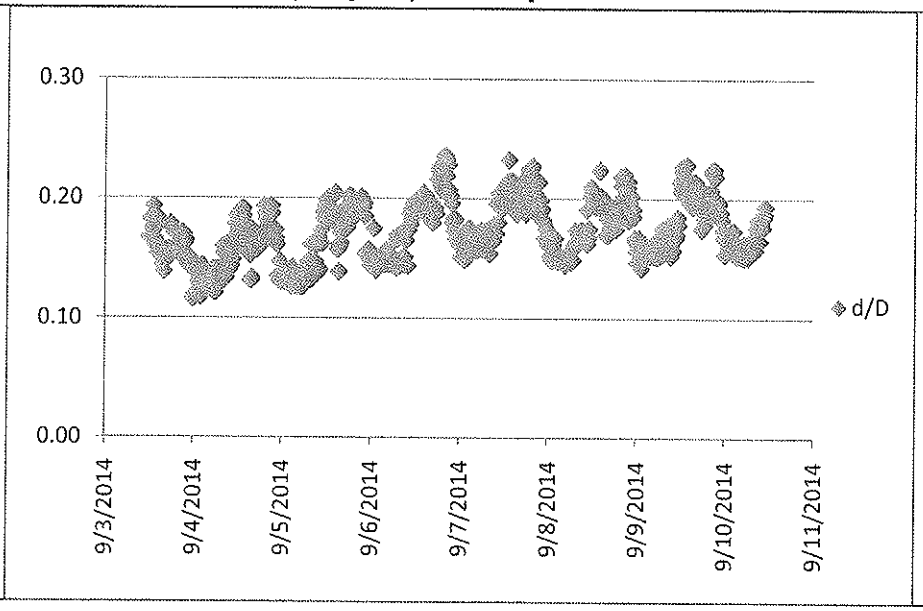
Level Stats



Velocity Stats



Level (depth) vs Pipe Diameter



A minimum velocity of 2 fps is generally required during peak flow to re-suspend solids. This site never reaches the minimum velocity requirement.

The depth to diameter (d/D) ratio for gravity sanitary sewer pipes 12 inches in diameter and less should be no greater than 0.65 in the ultimate peak flow condition. Therefore, this pipe still has capacity.

Hyatt Place, San Gabriel

kollin.altomare.architects

PRELIMINARY PLUMBING FIXTURE COUNT

August 12, 2014

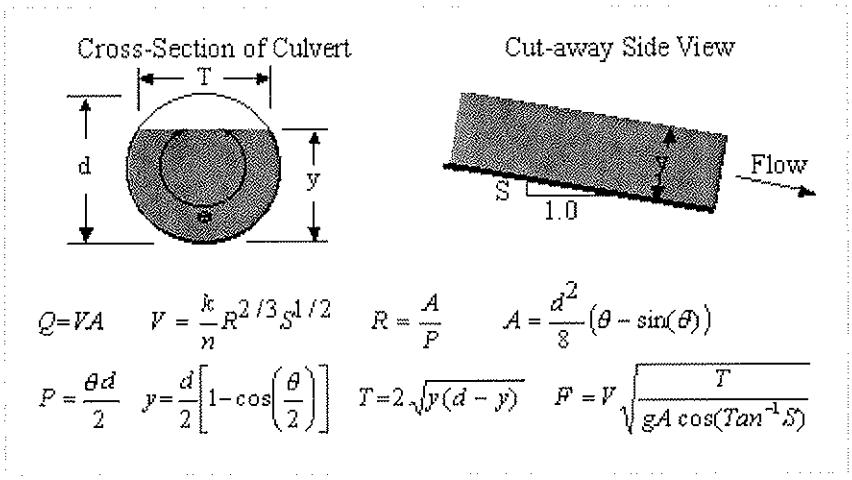
	Amount	Men			Women		Shower	Bath	Drink Foun.	Serv. Sink
		Toilet	Urinal	Lav	Toilet	Lav				
Hotel Public Areas										
Level 1: Lobby Restrooms	8,200 sf	3	2	2	4	2			1	
Level 2: Fitness Center	2,700 sf	1	1	1	1	1			1	1
Level 2: Spa	4,065 sf	2	2	2	2	2	3	4		1
Level 2: Meeting Restrooms	2,900 sf	2	2	2	4	2				
Hotel Guestrooms										
Level 2: Guestrooms	18 Rooms	18		36			18	18		
Level 3: Guestrooms	46 Rooms	46		92			46	46		
Level 4: Guestrooms	42 Rooms	42		84			42	42		
Level 5: Guestrooms	42 Rooms	42		84			42	42		
Level 6: Guestrooms	74 Rooms	74		148			74	74		
Hotel Back Of House										
Level 1: Lobby Pantry	-									1
Level P1: Staff Restrooms	-	2	3	3	3	3				1

	Amount	Men			Women		Shower	Bath	Drink Foun.	Serv. Sink
		Toilet	Urinal	Lav	Toilet	Lav				
Condominiums										
Level 3: Condo Unit	29 Units	34		34			5	29		1
Level 4: Condo Unit	28 Units	34		34			6	28		1
Level 5: Condo Unit	28 Units	34		34			6	28		1
Commercial Spaces										
Level 1: Restaurant	4,100 sf	2	2	2	4	2				3
Level 1: Public Restrooms		2	2	2	4	3			1	2
Level 2: Restaurant	4,875 sf	2	2	2	4	2				
Level P1: Tenant Restrooms	-	1	1	1	1	1				1
TOTAL		**341**	**17**	**563**	**27**	**18**	**242**	**311**	**3**	**13**

Enter slope and size of pipe

Calculated flow is known, enter a value for theta and solve for Q to obtain the depth of flow

Slope	0.0285	ft/ft
Pipe Diameter	8	inches
Theta	95.3	deg.
Wetted Perimeter (P)	0.554	ft
Flow Area (A)	0.037	ft^2
Hydraulic Radius (R)	0.07	ft
c	58.42	
Calculated Flow (Q)	0.0944	cfs
Depth of Flow (y)	1.304	inches



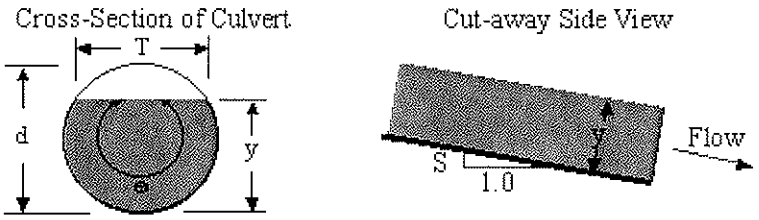
$$Q=VA \qquad V=\frac{k}{n}R^{2/3}S^{1/2} \qquad R=\frac{A}{P} \qquad A=\frac{d^2}{8}\left(\theta-\sin(\theta)\right)$$

$$P=\frac{\theta d}{2} \qquad y=\frac{d}{2}\left[1-\cos\left(\frac{\theta}{2}\right)\right] \qquad T=2\sqrt{y(d-y)} \qquad F=V\sqrt{\frac{T}{gA\cos(Tan^{-1}S)}}$$

Enter slope and size of pipe

Calculated flow is known, enter a value for theta and solve for Q to obtain the depth of flow

Slope	0.0285	ft/ft
Pipe Diameter	8	inches
Theta	246.5	deg.
Wetted Perimeter (P)	1.433	ft
Flow Area (A)	0.290	ft^2
Hydraulic Radius (R)	0.20	ft
c	82.04	
Calculated Flow (Q)	1.8046	cfs
Depth of Flow (y)	6.190	inches



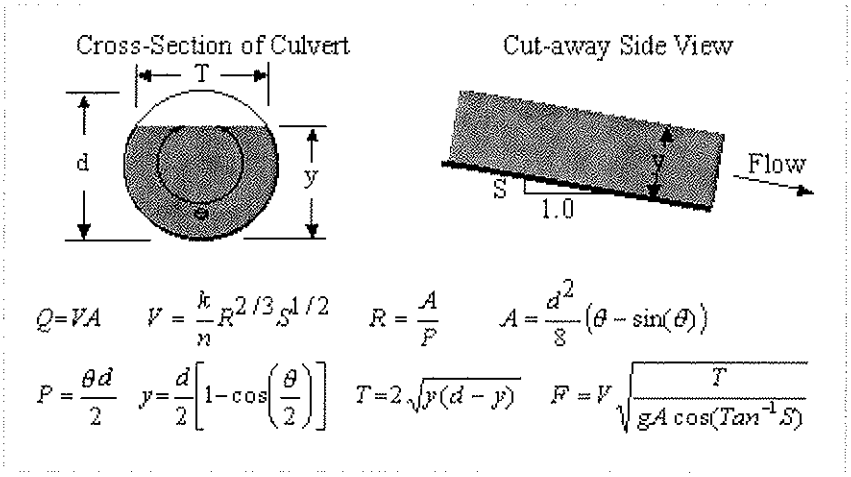
$$Q=VA \qquad V=\frac{k}{n}R^{2/3}S^{1/2} \qquad R=\frac{A}{P} \qquad A=\frac{d^2}{8}\left(\theta-\sin(\theta)\right)$$

$$P=\frac{\theta d}{2} \qquad y=\frac{d}{2}\left[1-\cos\left(\frac{\theta}{2}\right)\right] \qquad T=2\sqrt{y(d-y)} \qquad F=V\sqrt{\frac{T}{gA\cos(Tan^{-1}S)}}$$

Enter slope and size of pipe

Calculated flow is known, enter a value for theta and solve for Q to obtain the depth of flow

Slope	0.0285	ft/ft
Pipe Diameter	8	inches
Theta	180.1	deg.
Wetted Perimeter (P)	1.047	ft
Flow Area (A)	0.175	ft^2
Hydraulic Radius (R)	0.17	ft
c	77.73	
Calculated Flow (Q)	0.9351	cfs
Depth of Flow (y)	4.000	inches



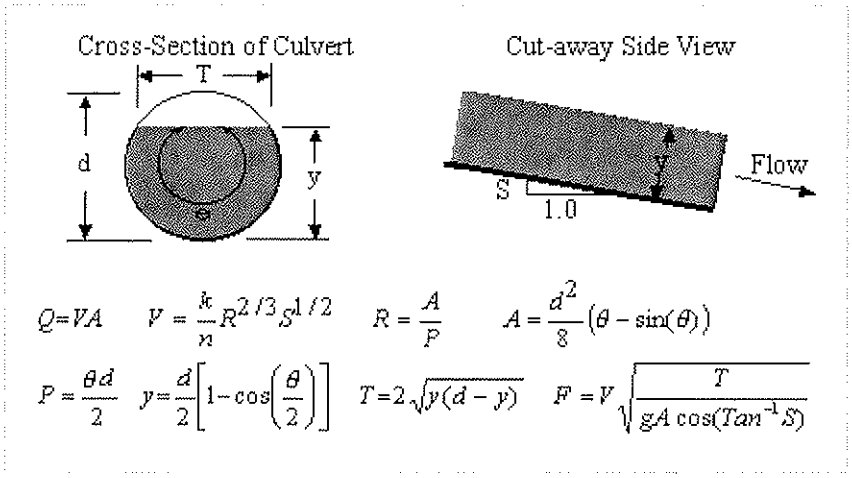
$$Q=VA \qquad V=\frac{k}{n}R^{2/3}S^{1/2} \qquad R=\frac{A}{P} \qquad A=\frac{d^2}{8}\left(\theta-\sin(\theta)\right)$$

$$P=\frac{\theta d}{2} \qquad y=\frac{d}{2}\left[1-\cos\left(\frac{\theta}{2}\right)\right] \qquad T=2\sqrt{y(d-y)} \qquad F=V\sqrt{\frac{T}{gA\cos(Tan^{-1}S)}}$$

Enter slope and size of pipe

Calculated flow is known, enter a value for theta and solve for Q to obtain the depth of flow

Slope	0.0285	ft/ft
Pipe Diameter	12	inches
Theta	72.84	deg.
Wetted Perimeter (P)	0.635	ft
Flow Area (A)	0.039	ft^2
Hydraulic Radius (R)	0.06	ft
c	56.96	
Calculated Flow (Q)	0.0944	cfs
Depth of Flow (y)	1.171	inches



$$Q=VA \qquad V=\frac{k}{n}R^{2/3}S^{1/2} \qquad R=\frac{A}{P} \qquad A=\frac{d^2}{8}(\theta-\sin(\theta))$$

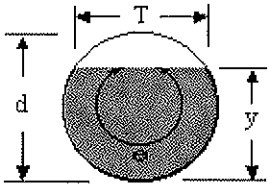
$$P=\frac{\theta d}{2} \qquad y=\frac{d}{2}\left[1-\cos\left(\frac{\theta}{2}\right)\right] \qquad T=2\sqrt{y(d-y)} \qquad F=V\sqrt{\frac{T}{gA\cos(Tan^{-1}S)}}$$

Enter slope and size of pipe

Calculated flow is known, enter a value for theta and solve for Q to obtain the depth of flow

Slope	0.0285	ft/ft
Pipe Diameter	12	inches
Theta	154.255	deg.
Wetted Perimeter (P)	1.345	ft
Flow Area (A)	0.282	ft^2
Hydraulic Radius (R)	0.21	ft
c	82.84	
Calculated Flow (Q)	1.8046	cfs
Depth of Flow (y)	4.659	inches

Cross-Section of Culvert



Cut-away Side View

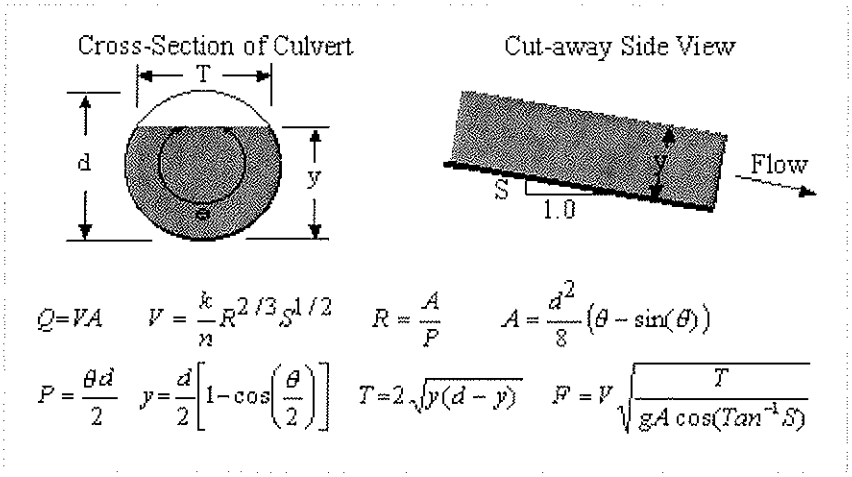
$$Q=VA \qquad V=\frac{k}{n}R^{2/3}S^{1/2} \qquad R=\frac{A}{P} \qquad A=\frac{d^2}{8}\left(\theta-\sin(\theta)\right)$$

$$P=\frac{\theta d}{2} \qquad y=\frac{d}{2}\left[1-\cos\left(\frac{\theta}{2}\right)\right] \qquad T=2\sqrt{y(d-y)} \qquad F=V\sqrt{\frac{T}{gA\cos(Tan^{-1}S)}}$$

Enter slope and size of pipe

Calculated flow is known, enter a value for theta and solve for Q to obtain the depth of flow

Slope	0.0285	ft/ft
Pipe Diameter	12	inches
Theta	240.15	deg.
Wetted Perimeter (P)	2.095	ft
Flow Area (A)	0.632	ft^2
Hydraulic Radius (R)	0.30	ft
c	91.07	
Calculated Flow (Q)	5.3366	cfs
Depth of Flow (y)	9.001	inches



$$Q=VA \qquad V=\frac{k}{n}R^{2/3}S^{1/2} \qquad R=\frac{A}{P} \qquad A=\frac{d^2}{8}\left(\theta-\sin(\theta)\right)$$

$$P=\frac{\theta d}{2} \qquad y=\frac{d}{2}\left[1-\cos\left(\frac{\theta}{2}\right)\right] \qquad T=2\sqrt{y(d-y)} \qquad F=V\sqrt{\frac{T}{gA\cos(Tan^{-1}S)}}$$

Appendix B

Sewer Study Key Map

87 N. Raymond Ave, Suite 300, Pasadena, California 91103 / o: 626•486-2555

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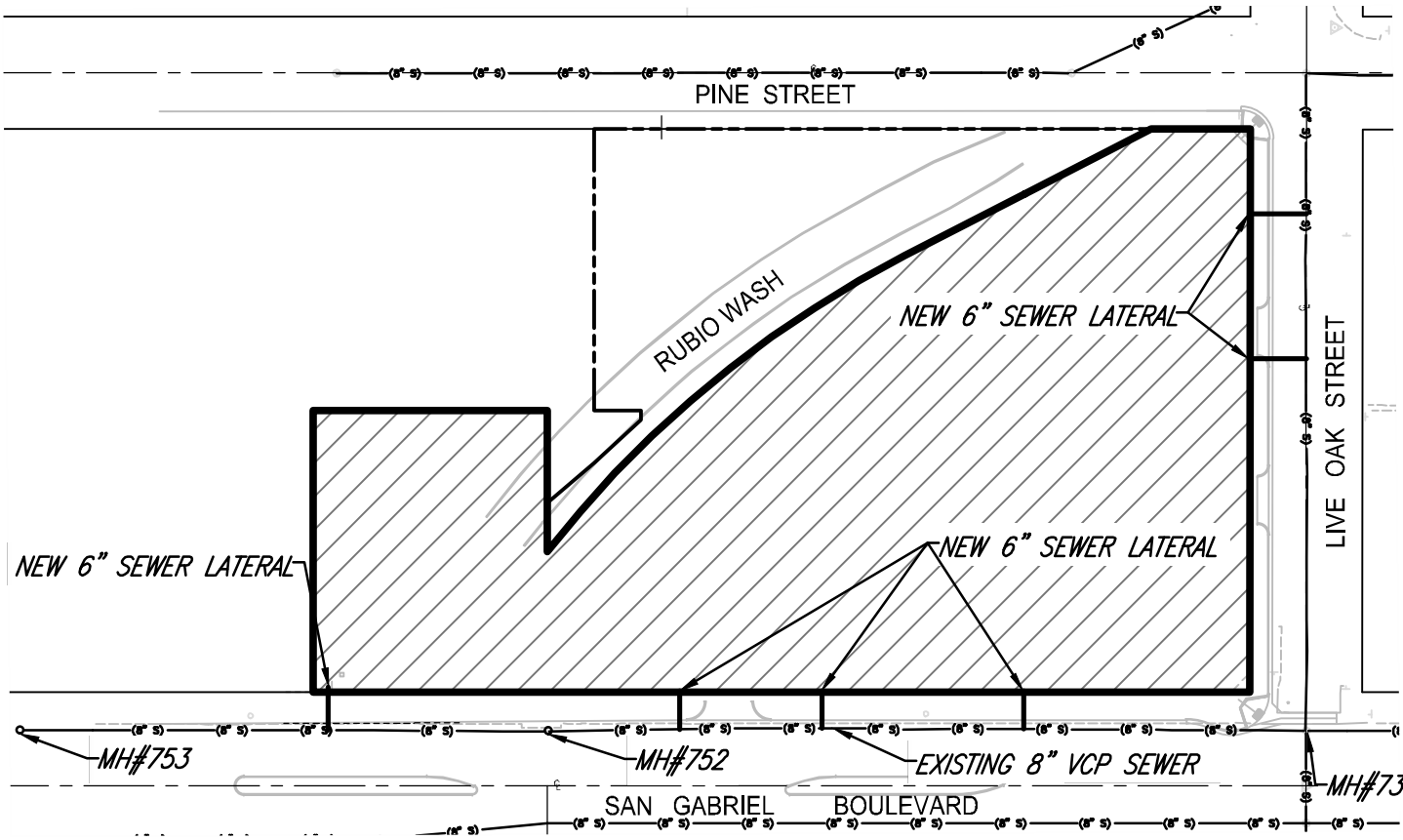
TRACT MAP NO. 73153 - RUBIO VILLAGE
KEY MAP



LEGEND

TRACT BOUNDARY

SITE AREA

SCALE : 1"=100'

PREPARED BY:

Southland
Civil Engineering
& Survey, LLP

87 N. Raymond Ave., Ste 300
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Office: 626-486-2555
Fax: 626-486-2556

DRAWN BY

CHECKED BY

DESIGNED BY

Larry L. Mar, R.C.E. No. 55069

Date

Proj. No.

Sheet

Appendix C

Los Angeles County - Estimated Average Daily Sewage Flows for

Various Occupancies & Zoning Coefficients

87 N. Raymond Ave, Suite 300, Pasadena, California 91103 / o: 626•486-2555

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Estimated Average Daily Sewage Flows for Various Occupancies

Occupancy	Abbreviation	*Average daily flow	
Apartment Buildings:			
Bachelor or Single dwelling units	Apt	150	gal/D.U.
1 bedroom dwelling units	Apt	200	gal/D.U.
2 bedroom dwelling units	Apt	250	gal/D.U.
3 bedroom or more dwelling units	Apt	300	gal/D.U.
Auditoriums, churches, etc.	Aud	5	gal/seat
Automobile parking	P	25	gal/1000 sq ft gross floor area
Bars, cocktails lounges, etc.	Bar	20	gal/seat
Commercial Shops & Stores	CS	100	gal/1000 sq ft gross floor area
Hospitals (surgical)	HS	500	gal/bed
Hospitals (convalescent)	HC	85	gal/bed
Hotels	H	150	gal/room
Medical Buildings	MB	300	gal/1000 sq ft gross floor area
Motels	MB	150	gal/unit
Office Buildings	Off	200	gal/1000 sq ft gross floor area
Restaurants, cafeterias, etc.	R	50	gal/seat
Schools:			
Elementary or Jr. High	S	10	gal/student
High Schools	HS	15	gal/student
Universities or Colleges	U	20	gal/student
College Dormitories	CD	85	gal/student

*Multiply the average daily flow by 2.5 to obtain the peak flow

Zoning Coefficients

Zone	Coefficient (cfs/Acre)
Agriculture ----------	0.001
Residential*:	
R-1 ----------	0.004
R-2 ----------	0.008
R-3 ----------	0.012
R-4 ----------	0.016*
Commercial:	
C-1 through C-4 ----------	0.015*
Heavy Industrial:	
M-1 through M-4 ----------	0.021*

* Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown

* Use 0.001 (cfs/unit) for condominiums only

Appendix D

Dwelling Unit Count/Commercial Area & Proposed Sewage Flow

Calculations

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APPENDIX D: DWELLING UNIT COUNT & SEWAGE FLOW CALCULATION

Per Los Angeles County Estimated Average Daily Sewage Flows for Various Occupancies:

PROJECT SITE SEWAGE FLOW (Building I & II)					
Type	**Amount**	**Units**	**Average Daily Flow (ADF)**	**Units**	**Average Daily Flow (ADF)**
Bachelor/Studio Dwelling Unit	12	D.U.	150	Gal/D.U.	1,800
1 Bedroom Dwelling Unit	179	D.U.	200	Gal/D.U.	35,800
2 Bedroom Dwelling Unit	31	D.U.	250	Gal/D.U.	7,750
Commercial Area	7,998	1000	100	GPD	800
Restaurant	***219***	Seats	50	GPD	10,950
				Total Daily Flow (GPD)	57,100
				Proposed Average Daily Flow (cfs)	0.088
				Proposed Peak Flow Daily (cfs)*	0.221
				Existing Peak Daily Flow (cfs)**	0.094
				Total Average Daily Flow (Existing + Prop. Avg.) (cfs)	**0.183**
				Total Peak (Existing + Prop. Peak) (cfs)	**0.315**

Restaurant	
Total Area (sf)	5480
Dining Room Ratio (0.4~0.6)	0.6
Dining Room Area (sf)	3,288
Seat Total	***219***

Multiply the average daily flow by 2.5 to obtain the peak flow

****Per Sewer Study by Tritech Engineering Associates, dated October 1, 2014 - See Appendix A for further detail***

RUBIO VILLAGE MIXED-USE
Proposed Project
Project Summary
January 23, 2023

Commercial				
Restaurant - Space 1				1,729
Restaurant - Space 2				2,000
Restaurant - Space 3				1,751
Retail - Space 4				6,316
Retail - Space 5				1,682
Total Commercial				**13,478**
Residential				
Building I				
Units	**Number**	**Area**		
Plan 1 - Studio	4	407		1,628
Plan 2 - Studio	4	421		1,684
Plan 3 - Studio	4	485		1,940
Plan 4 - 1 Bedroom	4	660		2,640
Plan 5 - 1 Bedroom	20	719		14,380
Plan 6 - 1 Bedroom	4	731		2,924
Plan 7 - 1 Bedroom	24	732		17,568
Plan 8 - 1 Bedroom	4	764		3,056
Plan 9 - 1 Bedroom	4	788		3,152
Plan 10 - 1 Bedroom	24	788		18,912
Plan 11 - 1 Bedroom	71	818		58,078
Plan 12 - 1 Bedroom	4	850		3,400
Plan 13 - 1 Bedroom	4	855		3,420
Plan 14 - 2 Bedroom	12	1099		13,188
Plan 15 - 2 Bedroom	15	1100		16,500
Plan 16 - 2 Bedroom	4	1291		5,164
Subtotal			206	
Building II				
Plan A - 1 Bedroom	2	635		1,270
Plan B - 1 Bedroom	4	646		2,584
Plan C - 1 Bedroom	4	718		2,872
Plan D - 1 Bedroom	2	734		1,468
Plan E - 1 Bedroom	4	836		3,344
Subtotal			16	
Building III				
Plan TH.1 - 3 Bedroom	1	2,115		2,115
Plan TH.2 - 3 Bedroom	1	2,167		2,167
Plan TH.3 - 3 Bedroom	1	2,483		2,483
Subtotal			3	
Subtotal Residential	**225**			**185,937**
Amenities (1,276 + 3,688)				**4,964**
Total Residential				**190,901**

Appendix E

Proposed Condition Sewer Line Hydraulic Calculations

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Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Feb 9 2023

Rubio Village Sewer Study - 8-inch VCP S. San Gabriel Blvd. (Average Daily Flow)

Circular

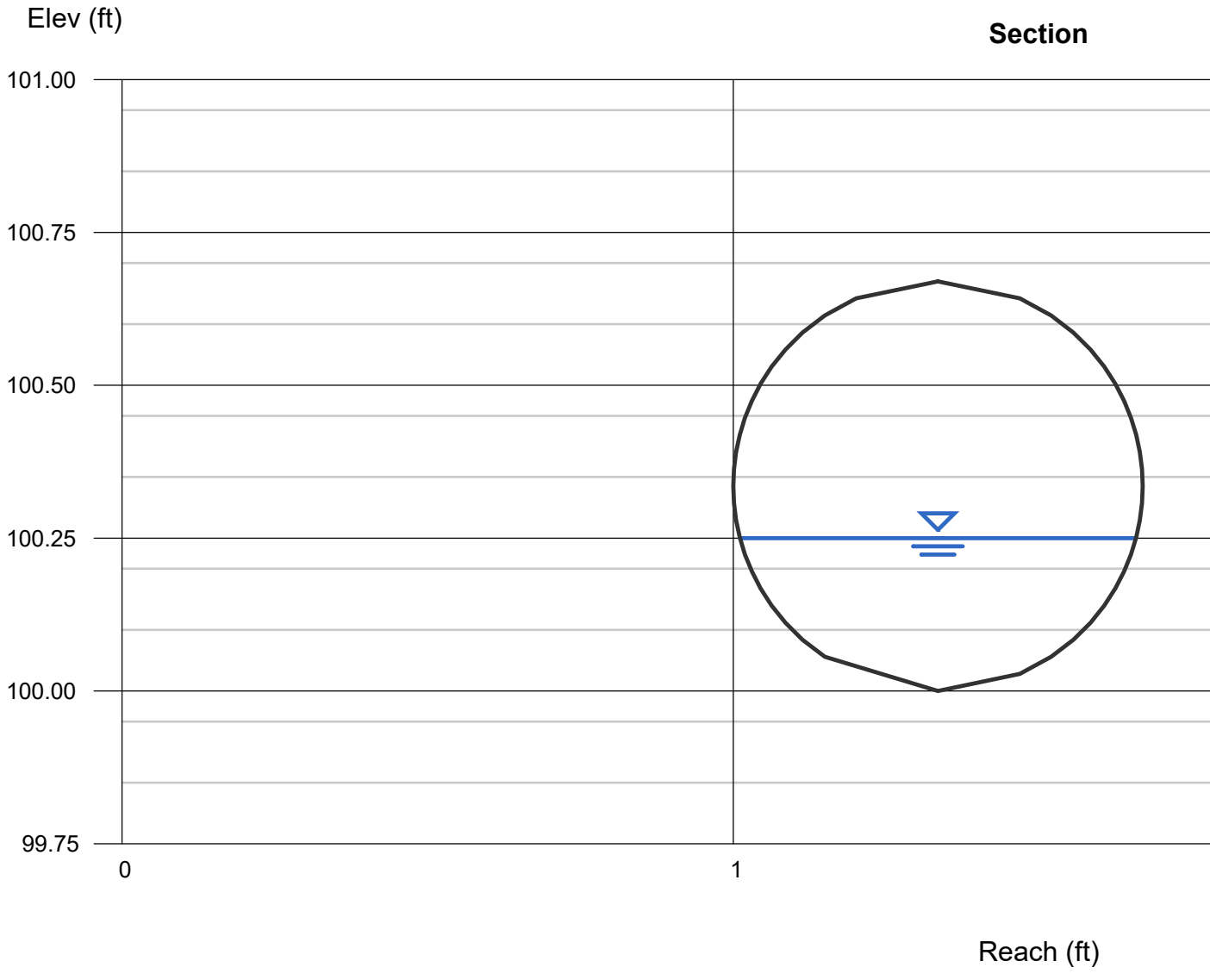
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.32
N-Value	= 0.014

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.18

Highlighted

Depth (ft)	= 0.25
Q (cfs)	= 0.183
Area (sqft)	= 0.12
Velocity (ft/s)	= 1.52
Wetted Perim (ft)	= 0.88
Crit Depth, Yc (ft)	= 0.20
Top Width (ft)	= 0.65
EGL (ft)	= 0.29



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Thursday, Feb 9 2023

Rubio Village Sewer Study - 8-inch VCP S. San Gabriel Blvd. (Peak Daily Flow)

Circular

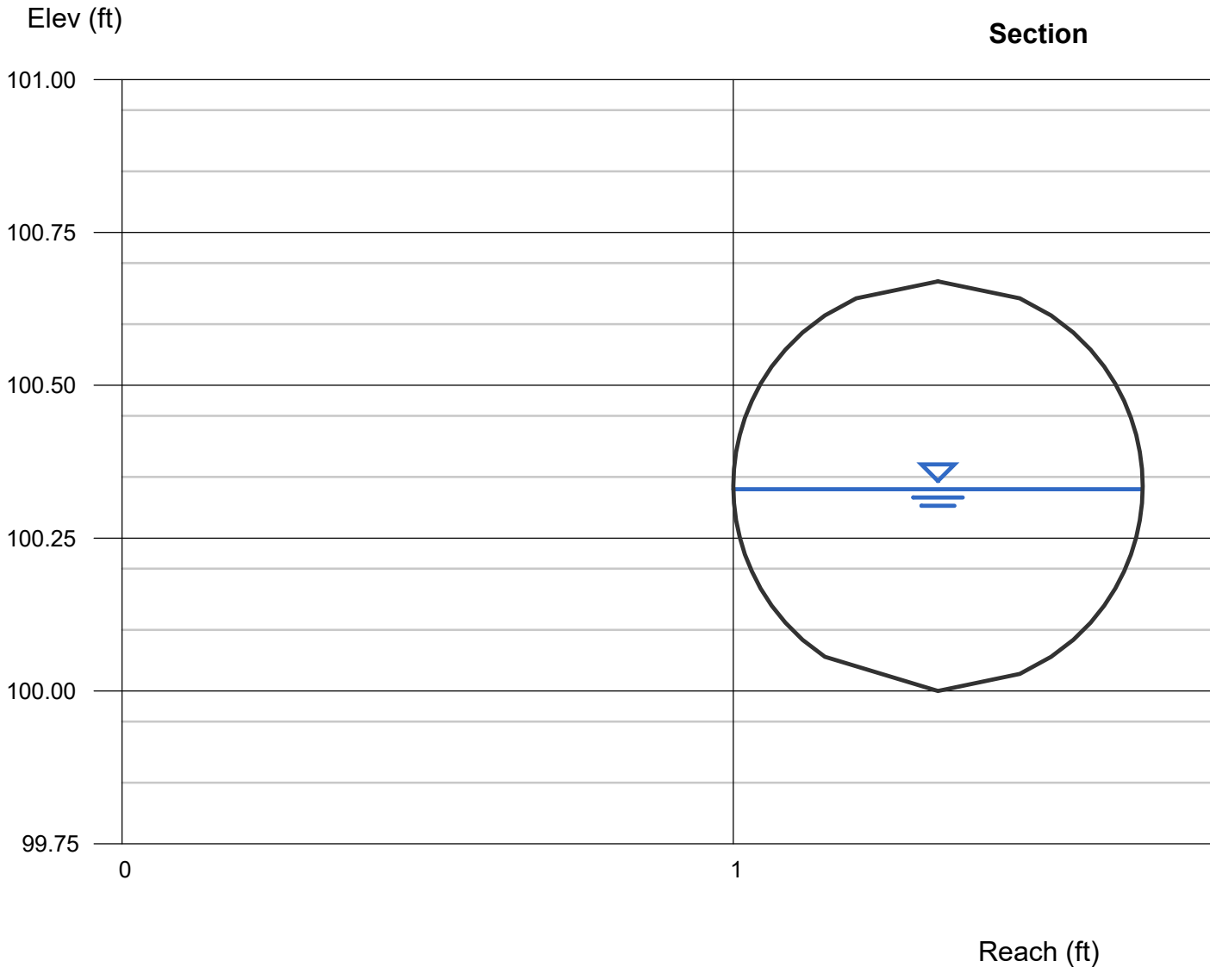
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.32
N-Value	= 0.014

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.32

Highlighted

Depth (ft)	= 0.33
Q (cfs)	= 0.315
Area (sqft)	= 0.17
Velocity (ft/s)	= 1.81
Wetted Perim (ft)	= 1.05
Crit Depth, Yc (ft)	= 0.26
Top Width (ft)	= 0.67
EGL (ft)	= 0.38



Appendix F

Sewer As-Builts

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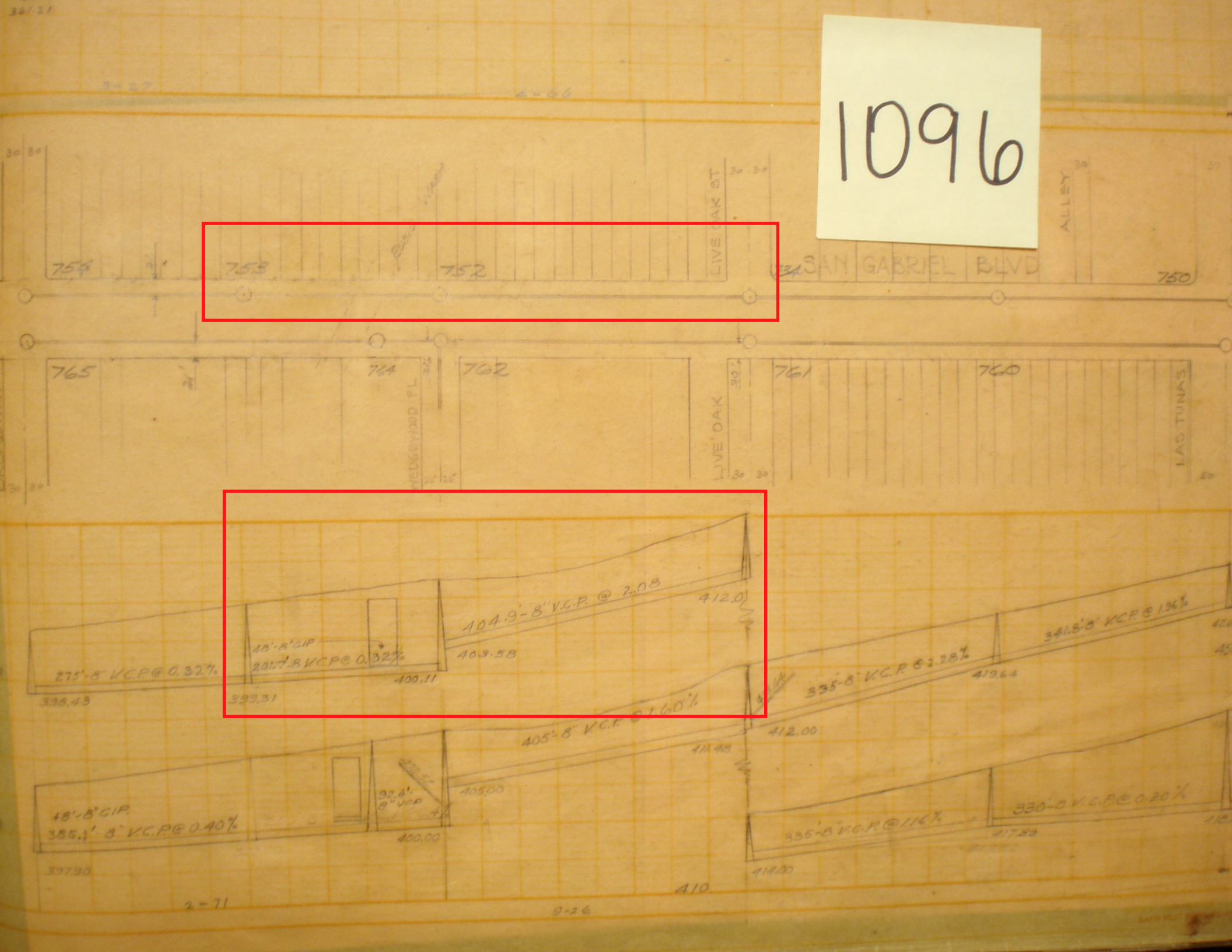
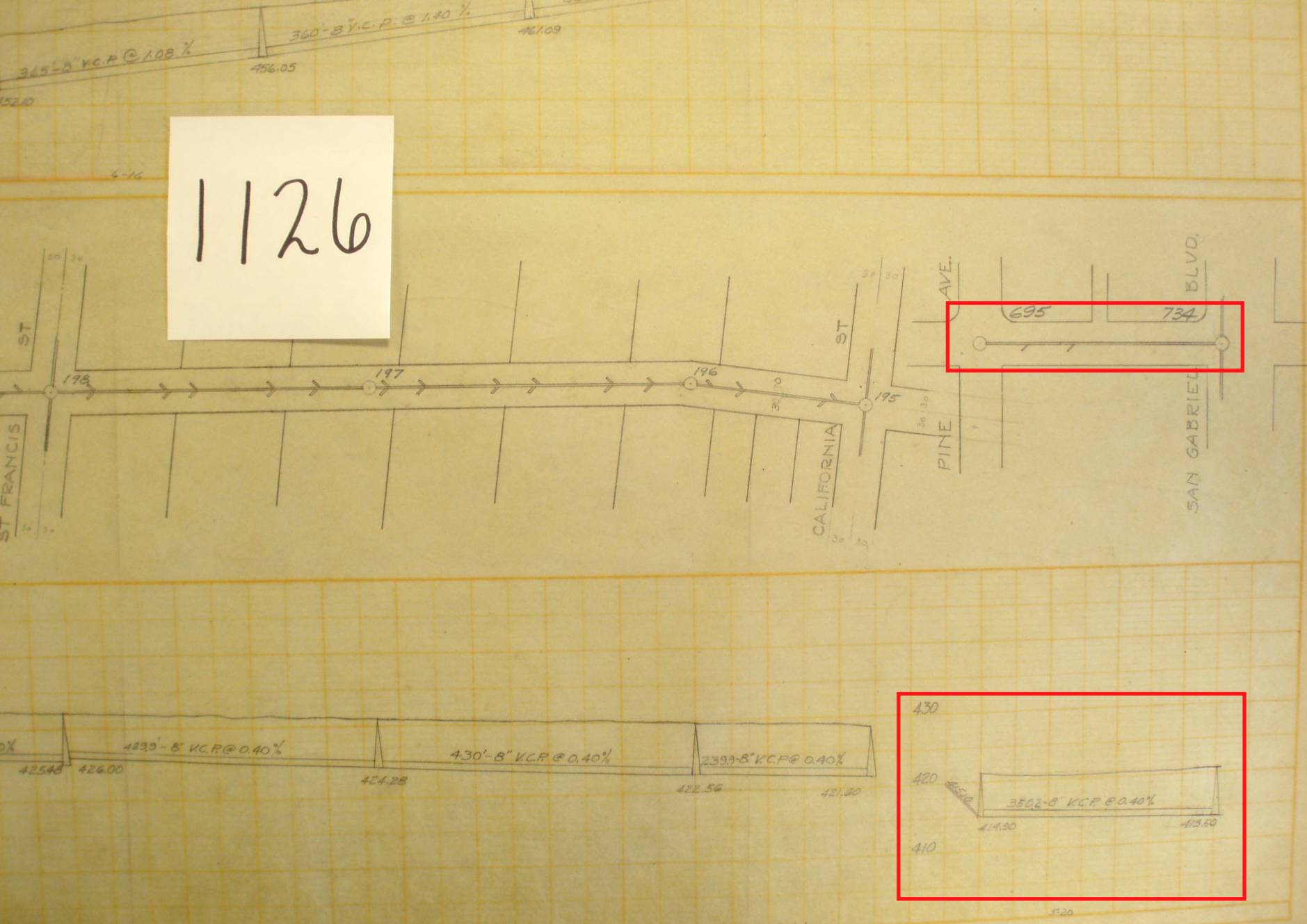
1096


754
753
752
LIVE OAK ST
SAN GABRIEL BLVD
ALLEY
760
765
764
762
761
760
LIVE OAK
LAS TUNAS
404.9'-8" V.C.P. @ 2.08
412.0
275'-8" V.C.P @ 0.32%
398.43
18'-8" C.I.P.
201.7'-8" V.C.P @ 0.32%
399.31
400.11
403.58
405'-8" V.C.P @ 1.60%
411.48
412.00
335'-8" V.C.P @ 2.28%
413.64
341.8'-8" V.C.P @ 1.36%
18'-8" C.I.P.
355.1'-8" V.C.P @ 0.40%
397.90
92.4'-8" V.C.P.
405.00
400.00
335'-8" V.C.P @ 1.16%
414.00
330'-8" V.C.P @ 0.20%
417.59
410

1126



COUNTRY CLUB DRIVE & PL.
LIVE OAK ST.

SHEET 36